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**REMARKS**

Claims 10, 14-26 and 30 are currently pending in the present application.

Claims 10, 15 and 23 have been amended to recite values for  $n$  of from about 3 to about 5, and values for  $m$  of from about 2 to about 2.5, in accordance with preferred embodiments of the present invention which were previously presented in dependent claims 11-13 and 27-29, and originally in claims 3 and 4. Claims 11-13 and 27-29, which depended from claims 10 and 23, respectively, have been canceled, without prejudice. Support for the amendments to claims 10, 15 and 23 can be found in the original claims, and in the Specification, for example, and at page 3, line 16-19. No new matter has been introduced by the amendments made herein. Additionally, a page captioned "VERSION WITH MARKINGS TO SHOW CHANGES MADE", in accordance with 37 C.F.R. §1.121(c)(1)(ii), is attached hereto. Entry of the amendments to the claims is therefore proper and respectfully requested.

The Examiner has set forth several rejections of the pending claims, under both 35 U.S.C. §102(b) and §103(a), based upon four separate prior art references. Applicants respectfully submit that none of the four references anticipates the preferred embodiments of the present invention, as now claimed, nor do any of the references, alone or in combination with one another, render the claimed invention obvious, as discussed in more detail below. Moreover, even if it were assumed, for argument's sake, that a *prima facie* case of obviousness could be established based upon any of the cited references, Applicants' showing of unexpected and significant improvement sufficiently rebuts any such alleged *prima facie* case of obviousness.

The eight rejections have been individually identified below, but have been combined into two groups (anticipation and obviousness) for purposes of Applicants' substantive comments.

In Paper No. 9, the Examiner rejects claims 10-24 and 27-29 under 35 U.S.C. §102(b), as being anticipated by British Patent No. GB 1,172,931 ("GB '931"). Specifically, the Examiner cites several lines of pages 2 and 3, as well as Examples IV and V. Also, in Paper No. 9, the Examiner rejects claims 10-25 and 27-30 under 35 U.S.C. §102(b), as being anticipated by U.S. Pat. No. 4,093,418 of Compton, *et al.* ("Compton"), citing several portions of the first four columns and Example 1. Also, in Paper No. 9, the Examiner rejects claims 10-13, 15-18, 20-24

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and 27-29 under 35 U.S.C. §102(b), as being anticipated by U.S. Pat. No. 4,280,919 of Stoeckigt, *et al.* ("Stoeckigt"), citing portions of columns 2 and 3, and Example 1. Finally, in Paper No. 9, the Examiner rejects claims 10-13, 15-18, 20-25 and 27-29 under 35 U.S.C. §102(b), as being anticipated by Japanese Patent Publication No. JP 07-303825 ("JP '825").

Applicants strenuously, but respectfully, traverse the Examiner's rejections, and the arguments and contentions in support thereof, for the following reasons.

It is well-settled that in order for a rejection under 35 U.S.C. §102(b) to be proper, each and every element of the claimed invention must be taught, either expressly or inherently, in a single prior art reference. (M.P.E.P. §2131). Moreover, in order for an overlapping range taught by the prior art to be anticipatory, where no specific prior art example falls within the claimed range, "the claimed subject matter must be disclosed in the reference with 'sufficient specificity to constitute anticipation under the statute.'" (M.P.E.P. §2131.03, citing *Ex parte Lee*, 31 USPQ2d 1105 (BPAI 1993)). Sufficient specificity is fact dependent. (*Id.*)

One embodiment of Applicant's claimed invention, as amended herein, is directed to a mixture of polymers comprising random fatty alcohol alkoxylates according to the general formula (I):



wherein  $R^1$  represents an alkyl group having from about 6 to about 22 carbon atoms, each EO represents  $-CH_2CH_2O-$ , each PO independently represents  $-C(CH_3)HCH_2O-$  or  $-CH_2C(CH_3)HO-$ , and wherein n represents the average number of EO units present in each random fatty alcohol alkoxylate and has a value of from about 3 to about 5, and wherein m represents the average number of PO units present in each random fatty alcohol alkoxylate and has a value of from about 2 to about 2.5. Other embodiments are directed to processes for producing such mixtures of polymers and to concentrates containing such mixtures.

As indicated in Applicants' Specification, and as evidenced by the Examples set forth therein, mixtures of random fatty alcohol alkoxylates, in accordance with the claimed invention, surprisingly exhibit excellent low-temperature behavior, including significantly improved cold cloud points and cold water solubility. (See, Spec., at page 2, lines 18-20; at page 2, line 29, through page 3, line 1; and at page 4, lines 9-17).

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GB '931 teaches a mixture of compounds of the general formula  $R-O(A)_nH$ , wherein A represents a random mixture of oxypropylene and oxyethylene groups, wherein the weight ratio of oxypropylene to oxyethylene can be from 0.85:1 to 2.75:1, and preferably between 1.25:1 and 2.25:1. (GB '931, p. 2, lines 15-35; and p. 3, lines 19-30). Moreover, GB '931 exemplifies such mixtures in Examples I, II, III, IV and V, as having oxypropylene to oxyethylene weight ratios of 2:1, 1.33:1, 1.72:1, 2:1, and 2:1, respectively. In each instance, the random alkoxyate contains more propoxyate groups than ethoxyate groups. Thus, no specific example in the reference falls within the claimed ratios of from about 3 to about 5 ethoxyate groups and from about 2 to about 2.5 propoxyate groups. Moreover, the preferred ratios taught by the reference do not provide sufficient specificity with respect to the claimed ranges to constitute anticipation.

Compton teaches specialized laundering agents which contain a nonionic surfactant produced by reacting a specific mixture of  $C_{10-18}$  fatty alcohols with a mixture of lower-alkylene oxides, such that the lower-alkylene oxides comprise from 57 to 68 % of the total weight of the combined alcohols and oxides in the reaction mixture, with the proportion of ethylene oxide in the mixed lower-alkylene oxides being from 50 to 70 % by weight. (Col. 1, line 58, through col. 2, line 3). However, nowhere does Compton explicitly teach mixtures of random fatty alcohol alkoxyates according to the claimed invention, wherein the average number of ethoxyate groups is from about 3 to about 5, and the average number of propoxyate groups from about 2 to about 2.5. Moreover, as evidenced by the Examples set forth in Compton, the nonionic surfactants taught therein do not exhibit good cold temperature performance. The aqueous cloud point disclosed in Example 1 is 28.5°C, versus -4°C and -14°C obtained in Applicants' Examples 1 and 2.

Stoeckigt teaches oxyalkylated alcohols as low-foam surfactants. However, the alkoxyates taught by Stoeckigt are not random polymers, but rather block polymers. Stoeckigt teaches reacting an alcohol with propylene oxide first, and subsequently reacting the propoxylated alcohol with ethylene oxide. (Col. 2, lines 31-34). Furthermore, in the Examples, Stoeckigt specifically teaches the preparation of block copolymers. (Col. 3, lines 43-50). Finally, the cloud points listed in Table 1 are all above 30°C.

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JP '825 teaches nonionic surfactants with good low temperature fluidity. These nonionic surfactants are obtained by the random alkoxylation of a predominantly saturated linear C<sub>8-18</sub> fatty alcohol with 5-15 moles of ethylene oxide and from 0.3-5 moles of propylene oxide. (JP '825 Trans, p. 2, section 0005). The preferred nonionic surfactants contain at least 7 moles of ethylene oxide and at least 0.5 moles of propylene oxide, per fatty alcohol molecule. In the Examples of JP '825, the random alkoxyates (Ex. 1, 2, and 3) contain at least 10 moles of combined ethoxylate and propoxylate. This degree of alkoxylation is much higher than the claimed invention wherein the combined average number of ethoxylate groups and propoxylate groups is from about 5 to about 7.5 (*i.e.*, about 3 to about 5 plus about 2 to about 2.5).

Applicants respectfully submit that none of the four references teaches a mixture of random fatty alcohol alkoxyates according to the claimed invention, wherein the average number of ethoxylate groups is from about 3 to about 5, and the average number of propoxylate groups from about 2 to about 2.5. Furthermore, even where minor overlap in the broadest degree of ethoxylation and propoxylation might be argued, Applicants respectfully submit that none of the cited references contains a specific example which falls within the claimed ranges, and that the cited references lack the required specificity to constitute anticipation under the statute for at least the reasons set forth above.

Accordingly, Applicants respectfully request reconsideration in light of the amendments made herein and the remarks set forth above, and withdrawal of the rejections under 35 U.S.C. §102(b) based upon GB '931, Compton, Stoeckigt and JP '825.

In Paper No. 9, the Examiner rejects claims 25, 26 and 30 under 35 U.S.C. §103(a), as being unpatentable over GB '931. Additionally, in Paper No. 9, the Examiner rejects claims 26 under 35 U.S.C. §103(a), as being unpatentable over Compton. Also, in Paper No. 9, the Examiner rejects claims 14, 19, 25-26 and 30 under 35 U.S.C. §103(a), as being unpatentable over Stoeckigt. And finally, in Paper No. 9, the Examiner rejects claims 14, 19, 26 and 30 under 35 U.S.C. §103(a), as being unpatentable over JP '825.

Each of the aforementioned rejections under 35 U.S.C. §103(a), is based upon a single reference, and rests upon the Examiner's contention that the claimed invention differs from each of the cited references only in the ranges claimed. The Examiner argues that "merely

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selecting proportions and ranges is not patentable absent a showing of criticality." (Paper No. 9, ¶¶ 11-14).

Applicants respectfully traverse the Examiner's rejection, and the arguments and contentions in support thereof, for the following reasons.

In order to establish a case of *prima facie* obviousness based upon a single reference, each of the following three criteria must be established: (1) the reference must contain a teaching or suggestion which would motivate one of ordinary skill in the art to modify the reference as suggested by the Examiner (it is not sufficient to say that the reference can be combined without a teaching in the cited reference to suggest the desirability of such a modification); (2) there must be a reasonable expectation of success; and (3) the reference must teach or suggest each and every element of Applicants' claimed invention. (M.P.E.P. §2143).

As discussed above, GB '931 does not teach or suggest the claimed average number of ethoxylate and propoxylate groups. Moreover, the reference specifically teaches that more propoxylate than ethoxylate is preferred. In contrast, the claimed random fatty alcohol alkoxylates contain from about 3 to about 5 ethoxylate groups and from about 2 to about 2.5 propoxylate groups. Additionally, GB '931 is not directed to improving low temperature behavior. Thus, it is submitted that GB '931 does not contain any teaching or suggestion which would motivate one of ordinary skill in the art to modify the teachings of the reference in order to arrive at the claimed invention, nor would one of ordinary skill in the art have any reasonable expectation of success in doing so.

Compton also teaches nonionic surfactants which exhibit cloud points higher than the claimed random fatty alcohol alkoxylates, which exhibit excellent low temperature behavior. One of ordinary skill in the art would have no reasonable expectation of successfully preparing random fatty alcohol alkoxylates with such excellent low temperature performance based upon the teachings of Compton. Moreover, Compton does not teach the claimed ranges of ethoxylate groups and propoxylate groups.

As discussed above, Stoeckigt is directed to non-random, block polymers and thus, fails to teach or suggest each and every element of the claimed invention. Stoeckigt contains no teaching or suggestion which would motivate one of ordinary skill in the art to

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modify its teachings to include random polymers. Stoeckigt specifically teaches sequential polymerization, wherein propoxylation occurs followed by ethoxylation.

Again, as discussed above, JP '825 suggests much higher degrees of alkoxylation than the claimed random fatty alcohol alkoxylates. JP '825 does not contain any teaching or suggestion which would motivate one of ordinary skill in the art to use a lower degree of alkoxylation.

Thus, it is submitted that none of the cited references satisfies all three criteria necessary to establish a *prima facie* case of obviousness.

Additionally, while not agreeing that a *prima facie* case of obviousness has been established, Applicants submit that any such *prima facie* case of obviousness based upon any overlapping ranges is sufficiently rebutted by the teaching away from the claimed invention by the prior art, in accordance with Part III of M.P.E.P §2144.05. GB '931 teaches alkoxylates containing more propoxylate than ethoxylate. GB '931 teaches ratios of at least 1.25:1 (PO:EO) as being preferred. GB '931 teaches away from the claimed average number of ethoxylate groups and propoxylate groups. JP '825 teaches high degrees of alkoxylation wherein the total number of alkoxylate groups is at least 7.5. Stoeckigt teaches block polymers, as opposed to random polymers.

Thus, Applicants submit that no *prima facie* case of obviousness can be established based upon the cited references, and that even assuming for argument's sake that a *prima facie* case of obviousness could be established based upon overlapping ranges, that any such *prima facie* case of obviousness is sufficiently overcome by a general teaching away from the claimed ranges in the cited references.

Finally, even if it were assumed, for argument's sake, that a *prima facie* case of obviousness could be established based upon any of the cited references, alone or in combination, which it cannot, any such *prima facie* case of obviousness is overcome by Applicant's showing of unexpected and advantageous results in terms of significantly improved low temperature behavior.

As set forth in the Specification, mixtures of random fatty alcohol alkoxylates, in accordance with the claimed invention, exhibit excellent low-temperature behavior, including

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significantly improved cold cloud points and cold water solubility. Moreover, this significant improvement is surprising. (See, Spec., at page 2, lines 18-20; at page 2, line 29, through page 3, line 1; and at page 4, lines 9-17).

In the Examples, which begin at page 6, line 13 of the Specification, random fatty alcohol alkoxylates, in accordance with the claimed invention are compared to block polymers with similar degrees of alkoxylation. As evidenced by the significantly lowered cloud points (-4°C and -14°C versus 1.5°C and 7.5°C) and the improved solubility in cold water, the random fatty alcohol alkoxylates, in accordance with the claimed invention outperform the low-temperature properties of other fatty alcohol alkoxylates.

It is submitted that the improved low temperature behavior, as evidenced in the Specification, sufficiently rebuts any alleged *prima facie* case of obviousness.

In view of the remarks set forth above and the amendments made herein, Applicants submit that all pending claims patentably distinguish over the prior art of record and known to Applicants, either alone or in combination. Accordingly, reconsideration, withdrawal of the rejections and a Notice of Allowance are respectfully requested.

Respectfully submitted,

ANSGAR BEHLER, *et al*

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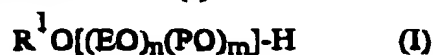
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**VERSION WITH MARKINGS TO SHOW CHANGES MADE****In the Claims:**

Claims 11-13 and 27-29 are canceled.

Claims 10, 15 and 23 are amended, as follows:

10. (Amended) A mixture of polymers comprising random fatty alcohol alkoxylates according to the general formula (I):



wherein  $R^1$  represents an alkyl group having from about 6 to about 22 carbon atoms, each EO represents  $-CH_2CH_2O-$ , each PO independently represents  $-C(CH_3)HCH_2O-$  or  $-CH_2C(CH_3)HO-$ , and wherein n represents the average number of EO units present in each random fatty alcohol alkoxylate and has a value of from about ~~2~~ 3 to about ~~7~~ 5, and wherein m represents the average number of PO units present in each random fatty alcohol alkoxylate and has a value of from about ~~1-5~~ 2 to about ~~3~~ 2.5.

15. (Amended) A process for producing a mixture of polymers comprising random fatty alcohol alkoxylates according to the general formula (I) :



wherein  $R^1$  represents an alkyl group having from about 6 to about 22 carbon atoms, each EO represents  $-CH_2CH_2O-$ , each PO independently represents  $-C(CH_3)HCH_2O-$  or  $-CH_2C(CH_3)HO-$ , and wherein n represents the average number of EO units present in each random fatty alcohol alkoxylate and has a value of from about ~~2~~ 3 to about ~~7~~ 5, and wherein m represents the average number of PO units present in each random fatty alcohol alkoxylate and has a value of from about ~~1-5~~ 2 to about ~~3~~ 2.5; said process comprising reacting ethylene oxide, propylene oxide and fatty alcohol in the presence of an aqueous base, wherein the propylene oxide and the ethylene oxide are present during the reaction in a molar ratio of from about 10:90 to about 60:40.



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**VERSION WITH MARKINGS TO SHOW CHANGES MADE (cont.)**

23. (Amended) A water-dilutable concentrate comprising an active ingredient and a surfactant, said surfactant comprising a mixture of polymers comprising random fatty alcohol alkoxylates according to the general formula (I):



wherein  $R^1$  represents an alkyl group having from about 6 to about 22 carbon atoms, each EO represents  $-CH_2CH_2O-$ , each PO independently represents  $-C(CH_3)HCH_2O-$  or  $-CH_2C(CH_3)HO-$ , wherein n represents the average number of EO units present in each random fatty alcohol alkoxylate and has a value of from about ~~2~~ 3 to about ~~7~~ 5, and wherein m represents the average number of PO units present in each random fatty alcohol alkoxylate and has a value of from about ~~1.5~~ 2 to about ~~3~~ 2.5.